



106101-144.ST25

#12

SEQUENCE LISTING

<110> Li, Zuomei
Bonfils, Claire
Besterman, Jeffrey

<120> Antisense Oligonucleotide Inhibition of Specific Histone
Deacetylase Isoforms

<130> 106101.144

<140> US 09/817,538

<141> 2001-03-26

<150> US 60/192,157

<151> 2000-03-24

<160> 33

<170> PatentIn version 3.1

<210> 1

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<212> PRT

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Arg Lys Met Glu Ile Tyr Arg Pro His Lys Ala Asn Ala Glu Glu Met
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Thr Lys Tyr His Ser Asp Asp Tyr Ile Lys Phe Leu Arg Ser Ile Arg
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Pro Asp Asn Met Ser Glu Tyr Ser Lys Gln Met Gln Arg Phe Asn Val
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Gly Glu Asp Cys Pro Val Phe Asp Gly Leu Phe Glu Phe Cys Gln Leu
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Ser Glu Ala Ser Gly Phe Cys Tyr Val Asn Asp Ile Val Leu Ala Ile
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Leu Glu Leu Leu Lys Tyr His Gln Arg Val Leu Tyr Ile Asp Ile Asp
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Ile His His Gly Asp Gly Val Glu Glu Ala Phe Tyr Thr Thr Asp Arg
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Val Met Thr Val Ser Phe His Lys Tyr Gly Glu Tyr Phe Pro Gly Thr
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Gly Asp Leu Arg Asp Ile Gly Ala Gly Lys Gly Lys Tyr Tyr Ala Val
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Tyr Pro Leu Arg Asp Gly Ile Asp Asp Glu Ser Tyr Glu Ala Ile Phe
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Lys Pro Val Met Ser Lys Val Met Glu Met Phe Gln Pro Ser Ala Val
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Val Leu Gln Cys Gly Ser Asp Ser Leu Ser Gly Asp Arg Leu Gly Cys
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Phe Asn Leu Thr Ile Lys Gly His Ala Lys Cys Val Glu Phe Val Lys
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Ser Phe Asn Leu Pro Met Leu Met Leu Gly Gly Gly Gly Tyr Thr Ile
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Arg Asn Val Ala Arg Cys Trp Thr Tyr Glu Thr Ala Val Ala Leu Asp
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Thr Glu Ile Pro Asn Glu Leu Pro Tyr Asn Asp Tyr Phe Glu Tyr Phe
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Gly Pro Asp Phe Lys Leu His Ile Ser Pro Ser Asn Met Thr Asn Gln

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Asn Thr Asn Glu Tyr Leu Glu Lys Ile Lys Gln Arg Leu Phe Glu Asn
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Glu Asp Ala Ile Pro Glu Glu Ser Gly Asp Glu Asp Glu Asp Asp Pro
 385 390 395 400

Asp Lys Arg Ile Ser Ile Cys Ser Ser Asp Lys Arg Ile Ala Cys Glu
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Glu Glu Phe Ser Asp Ser Glu Glu Glu Gly Glu Gly Gly Arg Lys Asn
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Ser Ser Asn Phe Lys Lys Ala Lys Arg Val Lys Thr Glu Asp Glu Lys
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Glu Glu Met Thr Lys Tyr His Ser Asp Glu Tyr Ile Lys Phe Leu Arg
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Ser Ile Arg Pro Asp Asn Met Ser Glu Tyr Ser Lys Gln Met His Ile
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Pro Phe Asn Val Gly Glu Asp Cys Pro Ala Phe Asp Gly Leu Phe Glu
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Phe Cys Gln Leu Ser Thr Gly Gly Ser Val Ala Gly Ala Val Lys Leu
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Asn Arg Gln Gln Thr Asp Met Ala Val Asn Trp Ala Gly Gly Leu His
 130 135 140

His Ala Lys Lys Tyr Glu Ala Ser Gly Phe Cys Tyr Val Asn Asp Ile
 145 150 155 160

Val Leu Ala Ile Leu Glu Leu Leu Lys Tyr His Gln Arg Val Leu Tyr
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Ile Asp Ile Asp Ile His His Arg Gly Asp Gly Val Glu Glu Ala Phe
 180 185 190

Tyr Thr Thr Asp Arg Val Met Thr Val Ser Phe Tyr Gly Glu Tyr Phe
 195 200 205

Pro Gly Thr Gly Asp Leu Arg Asp Ile Gly Ala Gly Lys Gly Lys Tyr
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Tyr Ala Val Asn Phe Pro Met Cys Asp Gly Ile Asp Asp Glu Ser Tyr
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Pro Ser Ala Val Val Leu Gln Cys Gly Ala Asp Ser Leu Ser Gly Asp
 260 265 270

Arg Leu Gly Cys Phe Asn Leu Thr Val Lys Gly His Ala Lys Cys Val
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Glu Val Val Lys Thr Phe Asn Leu Pro Leu Leu Met Leu Gly Gly Gly
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Gly Tyr Thr Ile Leu Arg Asn Val Ala Arg Cys Trp Thr Tyr Glu Thr
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Ala Val Ala Leu Asp Cys Glu Ile Pro Asn Glu Leu Pro Tyr Asn Asp
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Tyr Phe Glu Tyr Phe Gly Pro Asp Phe Lys Leu His Ile Ser Pro Ser
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 385 390 395 400

Asp Gly Glu Asp Pro Asp Lys Arg Ile Ser Ile Arg Ala Ser Asp Lys
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Arg Ile Ala Cys Asp Glu Glu Phe Ser Asp Ser Glu Asp Glu Gly Glu
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Lys Pro Tyr Gln Ala Ser Gln His Asp Met Cys Arg Phe His Ser Glu
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Asp Tyr Ile Asp Phe Leu Gln Arg Val Ser Pro Thr Asn Met Gln Gly
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Phe Thr Lys Ser Leu Asn Ala Pro Asn Val Gly Asp Asp Cys Pro Val
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Phe Pro Gly Leu Phe Glu Phe Cys Ser Arg Tyr Thr Gly Ala Ser Leu
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Gln Gly Ala Thr Gln Leu Asn Asn Lys Ile Cys Asp Ile Ala Asn Trp
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Ala Gly Gly Leu His His Ala Lys Lys Phe Glu Ala Ser Gly Phe Cys
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Tyr Val Asn Asp Ile Val Ile Gly Ile Leu Glu Leu Leu Leu Lys Tyr
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His Pro Arg Val Leu Tyr Ile Asp Ile Asp Ile His His Gly Asp Gly
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Val Gln Glu Ala Phe Tyr Leu Thr Asp Arg Val Met Thr Val Ser Phe
 180 185 190

His Lys Tyr Gly Asn Tyr Phe Phe Pro Gly Thr Gly Asp Met Tyr Glu
 195 200 205

Val Gly Ala Glu Ser Gly Arg Tyr Tyr Cys Leu Asn Val Pro Leu Arg
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Asp Gly Ile Asp Asp Gln Ser Tyr Lys His Leu Phe Gln Pro Val Ile
 225 230 235 240

Asn Gln Val Val Asp Phe Tyr Gln Pro Thr Cys Ile Val Leu Gln Cys
 245 250 255

Gly Ala Asp Ser Leu Gly Cys Asp Arg Leu Gly Cys Phe Asn Leu Ser
 260 265 270

Ile Arg Gly His Cys Glu Cys Val Glu Tyr Val Lys Ser Phe Asn Ile
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Gln Tyr Leu Asp Gln Ile Arg Gln Thr Ile Phe Glu Asn Leu Lys Met
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Leu Asn His Ala Pro Ser Val Gln Ile His Asp Val Pro Ala Asp Leu
 370 375 380

Leu Thr Tyr Asp Arg Thr Asp Glu Ala Asp Ala Glu Glu Arg Gly Pro
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Val Ala Ser Thr Glu Val Lys Met Lys Leu Gln Glu Phe Val Leu Asn
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Lys Lys Lys Ala Leu Ala His Pro Asn Leu Asn His Cys Ile Ser Ser
 65 70 75 80

Cys Pro Arg Tyr Trp Tyr Gly Lys Thr Gln His Ser Ser Leu Asp Gln
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Ser Ser Pro Pro Gln Ser Gly Val Ser Thr Ser Tyr Asn His Pro Val
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Leu Gly Met Tyr Asp Ala Lys Asp Asp Phe Pro Leu Arg Lys Thr Ala
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Ser Glu Pro Asn Leu Lys Leu Arg Ser Arg Leu Lys Gln Lys Val Ala
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Glu Arg Arg Ser Ser Pro Leu Leu Arg Arg Lys Asp Gly Pro Val Val
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Thr Ala Leu Lys Lys Arg Pro Leu Asp Val Thr Asp Ser Ala Cys Ser
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Val Ser Ala Glu Asn Gly Ile Ala Pro Ala Val Pro Ser Ile Pro Ala
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Glu Thr Ser Leu Ala His Arg Leu Val Ala Arg Glu Gly Ser Ala Ala
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Pro Leu Pro Leu Tyr Thr Ser Pro Ser Leu Pro Asn Ile Thr Leu Gly
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Leu Pro Ala Thr Gly Pro Ser Ala Gly Thr Ala Gly Gln Gln Asp Thr
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Glu Arg Leu Thr Leu Pro Ala Leu Gln Gln Arg Leu Ser Leu Phe Pro
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Gly Thr His Leu Thr Pro Tyr Leu Ser Thr Ser Pro Leu Glu Arg Asp
 275 280 285

Gly Gly Ala Ala His Ser Pro Leu Leu Gln His Met Val Leu Leu Glu
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Gln Pro Pro Ala Gln Ala Pro Leu Val Thr Gly Leu Gly Ala Leu Pro
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Leu His Ala Gln Ser Leu Val Gly Ala Asp Arg Val Ser Pro Ser Ile
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His Lys Leu Arg Gln His Arg Pro Leu Gly Arg Thr Gln Ser Ala Pro
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Leu Pro Gln Asn Ala Gln Ala Leu Gln His Leu Val Ile Gln Gln Gln
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His Gln Gln Phe Leu Glu Lys His Lys Gln Gln Phe Gln Gln Gln Gln
 370 375 380

Leu Gln Met Asn Lys Ile Ile Pro Lys Pro Ser Glu Pro Ala Arg Gln
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Pro Glu Ser His Pro Glu Glu Thr Glu Glu Glu Leu Arg Glu His Gln
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Ala Leu Leu Asp Glu Pro Tyr Leu Asp Arg Leu Pro Gly Gln Lys Glu
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Ala His Ala Gln Ala Gly Val Gln Val Lys Gln Glu Pro Ile Glu Ser
 435 440 445

Asp Glu Glu Glu Ala Glu Pro Pro Arg Glu Val Glu Pro Gly Gln Arg
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Gln Pro Ser Glu Gln Glu Leu Leu Phe Arg Gln Gln Ala Leu Leu Leu
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Glu Gln Gln Arg Ile His Gln Leu Arg Asn Tyr Gln Ala Ser Met Glu
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Ala Ala Gly Ile Pro Val Ser Phe Gly Gly His Arg Pro Leu Ser Arg

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His Ala Gly Arg Ile Gln Ser Ile Trp Ser Arg Leu Gln Glu Thr Gly		
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Leu Arg Gly Lys Cys Glu Cys Ile Arg Gly Arg Lys Ala Thr Leu Glu		
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Glu Leu Gln Thr Val His Ser Glu Ala His Thr Leu Leu Tyr Gly Thr		
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Leu Ala Ser Val Phe Val Arg Leu Pro Cys Gly Gly Val Gly Val Asp		
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Gly Arg Ile Val Leu Ala Leu Glu Gly Gly His Asp Leu Thr Ala Ile
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Cys Asp Ala Ser Glu Ala Cys Val Ser Ala Leu Leu Gly Asn Glu Leu
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Gly Tyr Asn Ile Arg Ala Leu Ala Glu Gly Val Ser Ala Ser Leu His
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Cys Arg Ser Ala Gln Ala Ser Val Ser Cys Ala Leu Glu Ala Leu Glu
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Pro His Leu Val Ala Val Cys Pro Ile Pro Ala Ala Gly Leu Asp
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Val Thr Gln Pro Cys Gly Asp Cys Gly Thr Ile Gln Glu Asn Trp
 1130 1135 1140

Val Cys Leu Ser Cys Tyr Gln Val Tyr Cys Gly Arg Tyr Ile Asn

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 Glu Leu Arg Gln Leu Leu His Lys Asp Lys Ser Lys Arg Ser Ala Val
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 Ala Ser Ser Val Val Lys Gln Lys Leu Ala Glu Val Ile Leu Lys Lys
 85 90 95
 Gln Gln Ala Ala Leu Glu Arg Thr Val His Pro Asn Ser Pro Gly Ile
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 Pro Tyr Arg Thr Leu Glu Pro Ile Glu Thr Glu Gly Ala Thr Arg Ser
 115 120 125
 Met Leu Ser Ser Phe Leu Pro Pro Val Pro Ser Ile Pro Ser Asp Pro
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 Pro Glu His Phe Pro Leu Arg Lys Thr Val Ser Glu Pro Asn Leu Lys
 145 150 155 160
 Leu Arg Tyr Lys Pro Lys Lys Ser Leu Glu Arg Arg Lys Asn Pro Leu
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 Leu Arg Lys Glu Ser Ala Pro Pro Ser Leu Arg Arg Arg Pro Ala Glu
 180 185 190
 Thr Leu Gly Asp Ser Ser Pro Ser Ser Ser Ser Thr Pro Ala Ser Gly
 195 200 205
 Cys Ser Ser Pro Asn Asp Ser Glu His Gly Pro Asn Pro Ile Leu Gly
 210 215 220
 Asp Ser Asp Arg Arg Thr His Pro Thr Leu Gly Pro Arg Gly Pro Ile

Val Leu Ser Ser Ser Glu Thr Pro Ala Arg Thr Leu Pro Phe Leu Thr
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 Gly Leu Ile Tyr Asp Ser Val Met Leu Lys His Gln Cys Ser Cys Gly
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 Asp Asn Ser Arg His Pro Glu His Ala Gly Arg Ile Gln Ser Ile Trp
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 Ser Arg Leu Gln Glu Arg Gly Leu Arg Ser Gln Cys Glu Cys Leu Arg
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 Gly Arg Lys Ala Ser Ile Glu Glu Leu Gln Ser Val His Ser Glu Arg
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 His Val Leu Leu Tyr Gly Thr Asn Pro Leu Ser Arg Leu Lys Leu Asp
 545 550 555 560
 Asn Gly Lys Leu Ala Gly Ile Ile Ala Gln Arg Met Phe Glu Met Leu
 565 570 575
 Pro Cys Gly Gly Val Gly Val Asp Thr Asp Thr Ile Trp Asn Glu Leu
 580 585 590
 His Ser Ser Asn Ala Ala Arg Trp Ala Ala Gly Ser Val Thr Asp Leu
 595 600 605
 Ala Phe Lys Val Ala Ser Arg Glu Leu Lys Asn Gly Phe Ala Val Val
 610 615 620
 Arg Pro Pro Gly His His Ala Asp His Ser Thr Ala Met Gly Phe Cys
 625 630 635 640
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 645 650 655
 Lys Ala Ser Lys Ala Ser Lys Ile Leu Ile Val Asp Trp Asp Val His
 660 665 670
 His Gly Asn Gly Thr Gln Gln Thr Phe Tyr Gln Asp Pro Ser Val Leu
 675 680 685

Tyr Ile Ser Leu His Arg His Asp Asp Gly Asn Phe Phe Pro Gly Ser
690 695 700

Gly Ala Val Asp Glu Val Gly Ala Gly Ser Gly Glu Gly Phe Asn Val
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Asn Val Ala Trp Ala Gly Gly Leu Asp Pro Pro Met Gly Asp Pro Glu
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Tyr Leu Ala Ala Phe Arg Ile Val Val Met Pro Ile Ala Arg Glu Phe
740 745 750

Ser Pro Asp Leu Val Leu Val Ser Ala Gly Phe Asp Ala Ala Glu Gly
755 760 765

His Pro Ala Pro Leu Gly Gly Tyr His Val Ser Ala Lys Cys Phe Gly
770 775 780

Tyr Met Thr Gln Gln Leu Met Asn Leu Ala Gly Gly Ala Val Val Leu
785 790 795 800

Ala Leu Glu Gly Gly His Asp Leu Thr Ala Ile Cys Asp Ala Ser Glu
805 810 815

Ala Cys Val Ala Ala Leu Leu Gly Asn Arg Val Asp Pro Leu Ser Glu
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Ala Leu His Lys Gln Met Arg Ile Val Lys Pro Lys Val Ala Ser Met
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Glu Glu Met Ala Thr Phe His Thr Asp Ala Tyr Leu Gln His Leu Gln
 65 70 75 80

Lys Val Ser Gln Glu Gly Asp Asp Asp His Pro Asp Ser Ile Glu Tyr
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Gly Leu Gly Tyr Asp Cys Pro Ala Thr Glu Gly Ile Phe Asp Tyr Ala
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Ser Lys Val Met Thr Val Ser Leu His Lys Phe Ser Pro Gly Phe Phe
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Pro Gly Thr Gly Asp Val Ser Asp Val Gly Leu Gly Lys Gly Arg Tyr
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Pro Met Cys Ser Phe Asn Met Thr Pro Val Gly Ile Gly Lys Cys Leu
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Lys Tyr Ile Leu Gln Trp Gln Leu Ala Thr Leu Ile Leu Gly Gly Gly
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Ile Lys Gly Asn Leu Lys His Val Val
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 herein "n" = any nucleotide.

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